



DEPARTMENT OF TRANSPORTATION

Federal Aviation Administration

14 CFR Part 25

[Docket No. FAA-2021-0891; Notice No. 25-21-04-SC]

Special Conditions: Airbus Model A321neoXLR Airplane; Passenger Protection from External Fire

AGENCY: Federal Aviation Administration (FAA), DOT.

ACTION: Notice of proposed special conditions.

SUMMARY: This action proposes special conditions for the Airbus Model A321neoXLR airplane. This airplane will have a novel or unusual design feature when compared to the technology envisaged by the airworthiness standards for transport category airplanes. This design feature is an integral rear center tank (RCT). The applicable airworthiness regulations do not contain adequate or appropriate safety standards for this design feature. These proposed special conditions contain the additional safety standards that the Administrator considers necessary to establish a level of safety equivalent to that established by the existing airworthiness standards.

DATES: Send comments on or before [INSERT DATE 45 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER].

ADDRESSES: Send comments identified by Docket No. FAA-2021-0891 using any of the following methods:

- *Federal eRegulations Portal:* Go to <http://www.regulations.gov/> and follow the online instructions for sending your comments electronically.
- *Mail:* Send comments to Docket Operations, M-30, U.S. Department of Transportation (DOT), 1200 New Jersey Avenue, SE, Room W12-140, West Building Ground Floor, Washington, DC, 20590-0001.

- *Hand Delivery or Courier:* Take comments to Docket Operations in Room W12-140 of the West Building Ground Floor at 1200 New Jersey Avenue, SE, Washington, DC, between 9 a.m. and 5 p.m., Monday through Friday, except Federal holidays.
- *Fax:* Fax comments to Docket Operations at 202-493-2251.

Privacy: Except for Confidential Business Information (CBI) as described in the following paragraph, and other information as described in 14 CFR 11.35, the FAA will post all comments received without change to <http://www.regulations.gov/>, including any personal information you provide. The FAA will also post a report summarizing each substantive verbal contact received about this proposal.

Confidential Business Information: Confidential Business Information (CBI) is commercial or financial information that is both customarily and actually treated as private by its owner. Under the Freedom of Information Act (FOIA) (5 U.S.C. 552), CBI is exempt from public disclosure. If your comments responsive to this Notice contain commercial or financial information that is customarily treated as private, that you actually treat as private, and that is relevant or responsive to this Notice, it is important that you clearly designate the submitted comments as CBI. Please mark each page of your submission containing CBI as “PROPIN.” The FAA will treat such marked submissions as confidential under the FOIA, and the indicated comments will not be placed in the public docket of this Notice. Submissions containing CBI should be sent to Shannon Lennon, Human Machine Interface, AIR-626, Technical Innovation Policy Branch, Policy and Innovation Division, Aircraft Certification Service, Federal Aviation Administration, 2200 South 216th Street, Des Moines, Washington 98198; telephone and fax 206-231-3209; e-mail shannon.lennon@faa.gov. Comments the FAA receives, which are not specifically designated as CBI, will be placed in the public docket for this rulemaking.

Docket: Background documents or comments received may be read at <http://www.regulations.gov/> at any time. Follow the online instructions for accessing the docket or go to Docket Operations in Room W12-140 of the West Building Ground Floor at 1200 New

Jersey Avenue, SE, Washington, DC, between 9 a.m. and 5 p.m., Monday through Friday, except Federal holidays.

FOR FURTHER INFORMATION CONTACT: Shannon Lennon, Human Machine Interface, AIR-626, Technical Innovation Policy Branch, Policy and Innovation Division, Aircraft Certification Service, Federal Aviation Administration, 2200 South 216th Street, Des Moines, Washington 98198; telephone and fax 206-231-3209; e-mail shannon.lennon@faa.gov.

SUPPLEMENTARY INFORMATION:

Comments Invited

The FAA invites interested people to take part in this rulemaking by sending written comments, data, or views. The most helpful comments reference a specific portion of the special conditions, explain the reason for any recommended change, and include supporting data.

The FAA will consider all comments received by the closing date for comments. The FAA may change these special conditions based on the comments received.

Background

On September 16, 2019, Airbus applied for an amendment to Type Certificate No. A28NM to include the new Model A321neoXLR airplane. The Model A321neoXLR airplane, which is a derivative of the Model A321neoACF airplane currently approved under Type Certificate No. A28NM, is a twin-engine transport category aircraft that seats 244 passengers and has a maximum takeoff weight of 202,000 lbs.

Type Certification Basis

Under the provisions of title 14, Code of Federal Regulations (14 CFR) 21.101, Airbus must show that the Model A321neoXLR airplane meets the applicable provisions of the regulations listed in Type Certificate No. A28NM, or the applicable regulations in effect on the date of application for the change, except for earlier amendments as agreed upon by the FAA.

If the Administrator finds that the applicable airworthiness regulations (e.g., 14 CFR part 25) do not contain adequate or appropriate safety standards for the Airbus Model

A321NeoXLR airplane because of a novel or unusual design feature, special conditions are prescribed under the provisions of § 21.16.

Special conditions are initially applicable to the model for which they are issued. Should the type certificate for that model be amended later to include any other model that incorporates the same novel or unusual design feature, or should any other model already included on the same type certificate be modified to incorporate the same novel or unusual design feature, these special conditions would also apply to the other model under § 21.101.

In addition to the applicable airworthiness regulations and special conditions, the Airbus Model A321NeoXLR airplane must comply with the fuel vent and exhaust emission requirements of 14 CFR part 34 and the noise certification requirements of 14 CFR part 36.

The FAA issues special conditions, as defined in 14 CFR 11.19, in accordance with § 11.38, and they become part of the type certification basis under § 21.101.

Novel or Unusual Design Feature

The Airbus Model A321NeoXLR airplane will incorporate the following novel or unusual design feature:

An integral RCT.

Discussion

The proposed Airbus Model A321neoXLR incorporates an integral RCT. This tank is a “center” fuel tank, in that would, if approved, be located in the airplane fuselage rather than in its wings. The tank is a “rear” tank, that would be located aft of the wheel bay; it would be in an area of the lower fuselage that partially replaces the aft cargo compartment of the airplane from which this proposed model is derived. The top of the tank would be directly below the floor of the passenger cabin. The fuel tank would be “integral” to the airplane, in that its walls would be part of the airplane structure. The exterior skin of the airplane fuselage would constitute part of

the walls of the fuel tank, and these areas would lack the thermal/acoustic insulation that usually lines the exterior skin of an airplane fuselage.

This proposed design was not envisaged by the FAA's regulatory requirements for insulation installations on transport category airplanes. 14 CFR 25.856(b) requires all thermal/acoustic insulation in the lower half of the airplane fuselage and their installation to comply with the flame penetration resistance test of Appendix F Part VII. The FAA adopted § 25.856(b) to raise the level of post-crash fire safety on transport category airplanes. Part VII of Appendix F requires a stringent test method for all thermal/acoustic insulation proposed for installation in the lower half of the fuselage. The FAA's intent in imposing this requirement was to ensure that this insulation provides an additional barrier between the occupants and an external post-crash fire, especially a fire resulting from a pool of spilled aviation fuel.¹ This barrier extends the time available for evacuation.

While the rule applies to the thermal/acoustic insulation that an applicant proposes as part of their design, it does not require applicants to install such insulation. Since the fuselage skins of the lower half of transport category airplanes are generally insulated, and were at the time these standards were developed, the FAA considered this approach to be sufficient to ensure safety. The rulemaking also noted, however, that if applicants began to propose designs that omitted this thermal/acoustic insulation, the FAA would revisit the need for a specific fuselage burnthrough standard.²

Thus, since this proposed design will lack thermal/acoustic insulation under the fuselage skin in the area of the fuel tank, current FAA regulations do not ensure that it will provide a continuous flame penetration (burnthrough) resistant barrier between the passengers and an

¹ See pg. 2 of FAA Advisory Circular 25.856-2A, *Installation of Thermal/Acoustic Insulation for Burnthrough Protection* (Jul. 29, 2008), available at [drs.faa.gov](https://www.faa.gov/air_traffic/operations/ATIS/ATIS_25.856-2A.pdf).

² *Improved Flammability Standards for Thermal/Acoustic Insulation Materials Used In Transport Category Airplanes*, 68 FR 45046, 45049 (Jul. 31, 2003).

external fire, nor that it will provide enough protection, against an external post-crash fire, to allow time for passengers to evacuate.

According to Airbus, its proposed design does not allow for compliant thermal/acoustic insulation to be placed beneath the cabin floor. This large volume of unheated liquid (fuel), directly below the floor of the passenger cabin, would, without mitigation, create a ‘cold feet’ effect for the passengers above it. Therefore, Airbus plans to install insulation panels between the fuel tank and the cabin floor, for comfort reasons. These insulation panels would normally be required to meet § 25.856(b). However, Airbus states that it is technically not feasible to install thermal/acoustic insulation that complies with § 25.856(b), due to the lack of space in this area, and the need to keep nearby decompression panels free of blockages and ensure adequate ventilation.

To address the assumption in the FAA’s current flammability standards that proposed airplane designs would include thermal/acoustic insulation in the lower fuselage, and to ensure that this proposed design does not reduce the time available for passenger evacuation in the case of a post-crash external fire, special conditions are needed. Specifically, the FAA proposes to require that the lower half of the airplane fuselage, spanning the longitudinal area of the tank, be resistant to fire penetration. “Resistant to fire penetration” would, for this special condition, mean that this area provides fire penetration resistance equivalent to the resistance which would be provided if the fuselage were lined with thermal/acoustic insulation that meets the flame penetration resistance test requirements of part VII of Appendix F. The applicant’s method of compliance may, but is not required to, be based upon any inherent flame penetration resistance capability provided by the construction of the fuel tank and/or other surrounding features.

The proposed special conditions contain the additional safety standards that the Administrator considers necessary to establish a level of safety equivalent to that established by the existing airworthiness standards.

Applicability

As discussed above, these special conditions are applicable to the Airbus Model A321NeoXLR airplane. Should Airbus apply at a later date for a change to the type certificate to include another model incorporating the same novel or unusual design feature, these special conditions would apply to that model as well.

Conclusion

This action affects only a certain novel or unusual design feature on one model of airplane. It is not a rule of general applicability.

List of Subjects in 14 CFR Part 25

Aircraft, Aviation safety, Reporting and recordkeeping requirements.

Authority Citation

The authority citation for these special conditions is as follows:

Authority: 49 U.S.C. 106(f), 106(g), 40113, 44701, 44702, 44704.

The Proposed Special Conditions

The Federal Aviation Administration (FAA) proposes the following special conditions as part of the type certification basis for Airbus Model A321NeoXLR airplanes.

Passenger Protection from External Fire

The lower half of the fuselage, spanning the longitudinal location of the rear center fuel tank, must be resistant to fire penetration.

Issued in Kansas City, Missouri, on April 1, 2022.

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Aircraft Certification Service.

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